

WSUD

Little Bourke Street



Little Bourke Street Rain Garden Tree Pits constructed 2006

Project Title

Little Bourke Street Rain Garden Tree Pits

Year

2006

Location

Melbourne

Responsible Authority

City of Melbourne

Water Sensitive Urban Design Tool

Bio-retention basins



Aim

This project has been included as a case study because it is important being the first example of Water Sensitive Urban Design (WSUD) in such a built up area. The project has aimed to integrate stormwater quality infrastructure into an urbanised CBD street by meeting high-level design aesthetic requirements of the City. A process of discussion and consultation with the local community and traders has been undertaken to foster support and ownership of the project.

Project Description

When it rains stormwater is directed through the tree grate and into tree pit the soil acts as a filter to remove metals, oils and litter, which may be harmful to our waterways. The high levels of nutrient in stormwater help the trees to grow. The project will also save water by reducing the need for precious water supplies to be used to look after the trees. This will help our environment by filtering harmful substances out of the stormwater before it continues on its journey to our waterways, the Yarra River and eventually to Port Phillip Bay.

Over 50% of Traders have agreed to participate in a litter prevention program and advocate to pedestrians and customers in the area that littering is not acceptable.

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Photos

Note: Click thumbnail to view larger size



High detail bluestone paving tree pit cover and steel inlet grate



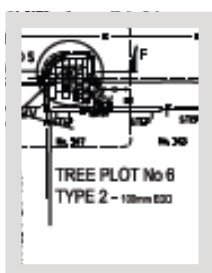
Rain garden tree pits incorporated into pedestrian space



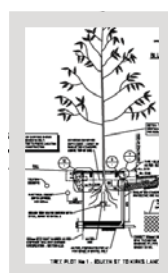
Heavy duty street furniture designed to protect the rain garden

Plans

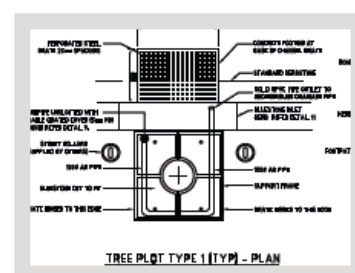
Note: Click thumbnail to view larger size



Plan



Sections



Details

Community Education

This project emphasized involvement of the traders to raise public awareness regarding litter pollution. There are benefits to the streetscape through the traders taking more responsibility of stormwater and litter in their area, and subsequently acting as educational officers in the area. The project has entailed a multi-disciplinary process that has built the capacity of different teams within City of Melbourne to further incorporate water sensitive urban design into their new capital projects and contribute to the improvement of the health of the Yarra River.

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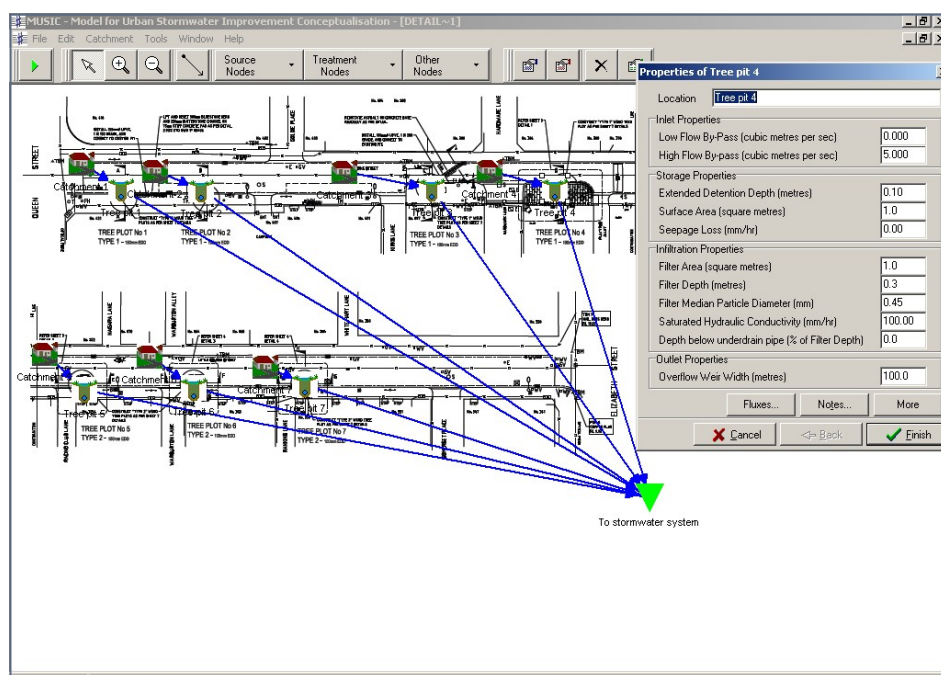
Maintenance

The rain garden tree pits also act as litter traps and maintenance crews will remove this litter as part of regular street cleaning. The works were completed in July 2006 so information about the required maintenance is not currently available.

Music Modelling Results

The Co-operative Research Centre for Catchment Hydrology's program "MUSIC" was used to assess the performance of the each tree pit and of the entire system. Each tree pit treats a different sub-catchment and has different filter media depth depending on the depth of the underground services. They have been modelled separately in order to reflect these differences. The model is conservative, assuming no seepage loss. The saturated hydraulic conductivity was assumed to be 100mm/hr.

Three tree pits are not reaching the stormwater quality target for nitrogen but the others exceed the performance targets, leading to an overall performance of the entire system slightly below the stormwater quality target for nitrogen (44% retention of total nitrogen instead of 45% expected).



The MUSIC model indicates the following removal rates.

	% Reduction
Total Suspended Solids	84
Total Phosphorus	71
Total Nitrogen	44

Recommendations

Rain garden tree pits are effective in treating run off in constrained urban areas and should be considered for implementation in all cases of street tree installation in local government capital and renewal works programs.

Contact

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Rain garden tree pits incorporated into pedestrian space

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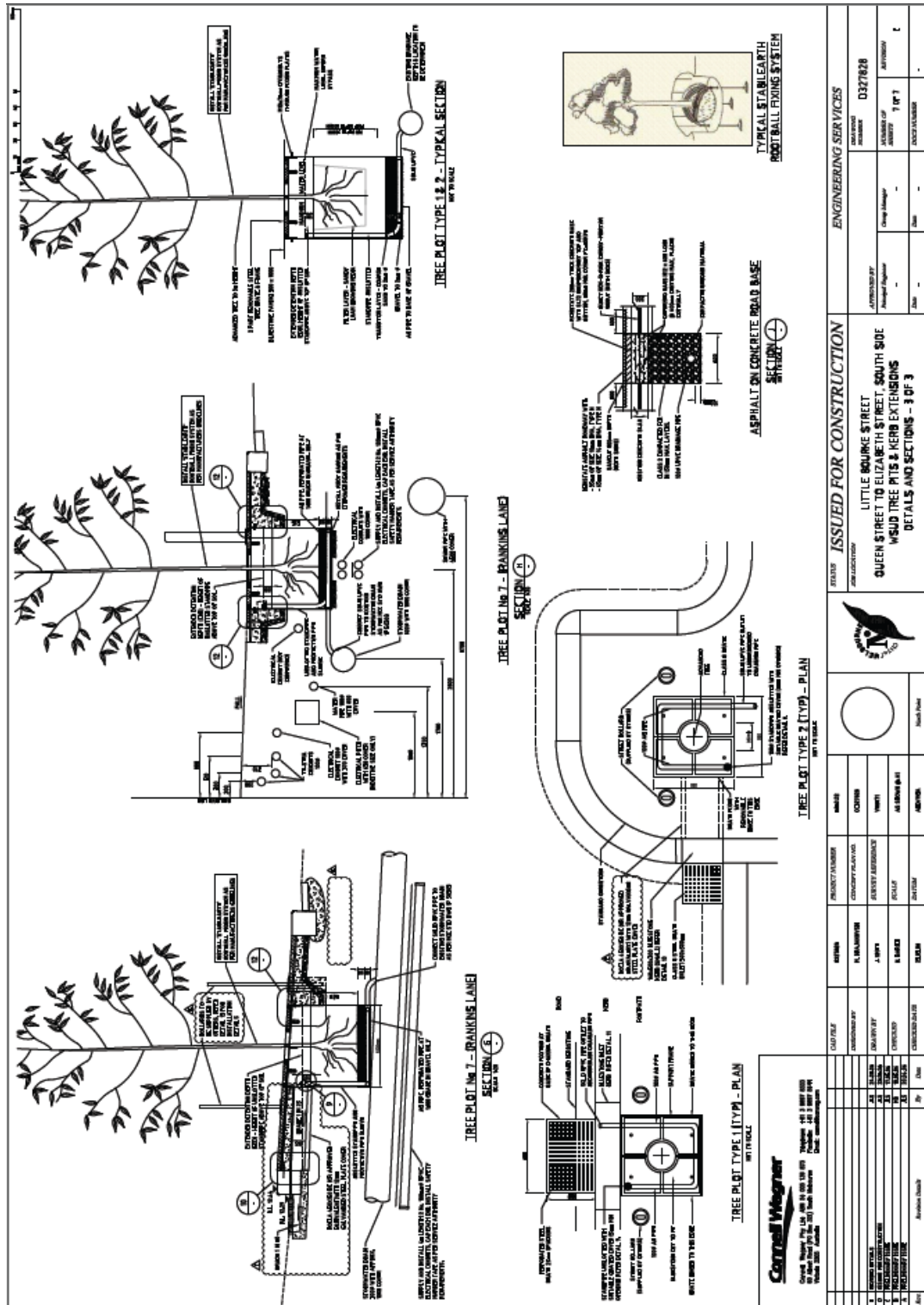
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